

Reduced seed set by root herbivory in a coastal dune plant: are pollinators involved?

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Herbivory is often one of the most important environmental factors affecting plant fitness. Because herbivores deplete resource reserves in plants, there may be fewer resources left to invest in reproductive output and/or in pollinator attractive features.

Our study system involves *Cynoglossum officinale*, a monocarpic perennial dune plant which is often subject to root herbivory by the specialist beetle *Mogulones cruciger*. The larvae of this beetle develop in the roots and feed on root tissue. This larval infestation was found to have a negative effect on the seed set of *C. officinale*. However, it is not clear whether there is only a direct cause to this negative effect: through a lower resource allocation to seed production, or whether there is also an indirect cause: through reduced pollination success due to lower resource allocation to pollinator attraction. In this experiment we investigated whether pollinator attractiveness of *C. officinale* plants is affected by this root herbivory and whether this may have an impact on the reproductive output.

After subjecting study plants to different herbivore pressures in the lab, we measured several plant traits. At the VLIZ research station in Wenduine we observed natural pollinator visitation and assessed pollen limitation through supplemental hand pollinations. Plants were harvested after flowering and then seed set and root damage were quantified.

In this experiment root herbivory also turned out to have a negative impact on seed set. Moreover, we found that pollinator visitation rate decreased and pollen limitation increased with increasing root damage. Consequently, the results of this experiment indicate that pollination is involved in the reduced seed set caused by root herbivory.